

**What is Claimed is:**

1. A method of determining one or more statistical estimators of future customer behavior, the method comprising the steps of:

- 5 (i) accessing data about past customer behavior;
- (ii) generating a Bayesian statistical model using the data about the past customer behavior; and
- (iii) using the model to generate one or more statistical estimators of future customer behavior.

10 2. A method as claimed in claim 1, further comprising the step of accessing information about customer attributes, and wherein the model is generated using the information about customer attributes.

15 3. A method as claimed in claim 1, wherein the model comprises a representation of the customer behavior in the form of a hidden Markov model.

4. A method as claimed in claim 3, wherein the hidden Markov model has a random number of states.

20 5. A method as claimed in claim 1, wherein the step of generating the model comprises clustering the past customer behavior data into a plurality of states.

25 6. A method as claimed in claim 5, wherein the behavior of each customer over time is represented as a path through a plurality of the states and wherein these paths are unobserved and are considered random.

7. A method as claimed in claim 4, wherein each state is characterized by a plurality of random state parameters.

8. A method as claimed in claim 7, wherein past data about a customer's behavior whilst that customer is in a particular state is assumed to follow a parametric probability model.

9. A method as claimed in claim 1, wherein the step of generating the Bayesian statistical model comprises specifying a plurality of Bayesian prior probability distributions.

10. A method as claimed in claim 9, wherein the step of generating the model further comprises generating a plurality of Bayesian posterior probability distributions on the basis of at least the plurality of Bayesian prior probability distributions and the past customer data.

11. A method as claimed in claim 1, wherein the step (iii) of using the model to generate one or more statistical estimators comprises the step of using a sampling method to draw approximate random samples from the posterior distribution and performing Monte Carlo inference using the samples to generate the statistical estimators.

12. A method as claimed in claim 1, wherein the step (iii) of using the model to generate one or more statistical estimators comprises the step of numerically or analytically calculating the Bayesian posterior probability distributions.

13. A method as claimed in claim 1, wherein the statistical estimators comprise a probability that a customer will exhibit a certain behavior.

14. A method as claimed in claim 1, wherein the statistical estimators comprise the most probable behavior exhibited by customers.

15. A method as claimed in claim 1, wherein the past customer data comprises information about customer transactions.

16. A computer system for determining one or more statistical estimators of future customer behavior, the computer system comprising:

an input for accessing data about past customer behavior; and

a processor for generating a Bayesian statistical model using the data about the past customer behavior, and using the model to generate one or more statistical estimators of future customer behavior.

17. A computer system as claimed in claim 16, wherein the data about past customer behavior comprises customer attributes.

18. A computer system as claimed in claim 16, wherein the model is generated by clustering the past customer behavior data into a plurality of states.

19. A computer program for controlling a computer system such that one or more statistical estimators of future customer behavior are determined, the computer program being arranged to control the computer system such that:

(i) data about past customer behavior is accessed;

(ii) a Bayesian statistical model is generated using the data about the past customer behavior; and

(iii) using the model, one or more statistical estimators of future customer behavior are generated.

20. A computer program as claimed in claim 19, wherein the data about past customer behavior comprises customer attributes.

21. A computer program as claimed in claim 19, wherein the computer system is controlled such that the model is generated by clustering the past customer behavior data into a plurality of states.

22. A program storage medium readable by a computer system having a memory, the medium tangibly embodying one or more programs of instructions executable by the computer system to perform method steps for controlling the computer system to determine one or more statistical estimators of future customer behavior, the method comprising the steps of:

- (i) accessing data about past customer behavior;
- (ii) generating a Bayesian statistical model using the data about the past customer behavior; and
- (iii) using the model, generating one or more statistical estimators of future customer behavior.